

REMARKS

Responsive to the Interview Summary prepared by Examiner Steve Alvo on June 28, 2004, Applicants respectfully provide the Examiner with a summary of the most persuasive objective evidence of record which he indicated would aid in his determination. Specifically, the evidence demonstrates that the Japan '299 patent does not anticipate or render the invention of non-alkali enzymatic deinking (e.g., at a pH between about 3 to less than 8) obvious because the specific Japan '299 reference, and the prior art generally, taught that deinking can only successfully be performed at pH 8.0 or higher.

The first two references evidence that deinking was believed to be required at pH 8.0 or higher.

- I. The reference article from Pulp and Paper published in November 1986 provided for the Examiner's review, teaches as the "chemistry of deinking" the use of caustic soda. (p. 60.) The reference published approximately three years before the present priority date describes that "[h]igh concentrations of alkali (pH 11.5 to 12.0) can saponify and/or hydrolyze some ink vehicles and will swell fibers to aid in breaking up inks and coatings." (*Id.*) The reference goes on to teach that "[s]ufficient caustic soda should be added to each batch to attain the desired pH." (*Id.*) No pH less than 10 is disclosed in this reference teaching the "chemistry of deinking.
- II. The reference article from TAPPI Proceedings published in October 1990 (approximately one year after the present priority date) provided for the Examiner's review, teaches deinking within a range of pHs: "low pH" for the purposes of deinking as being a pH of 8 and a "higher pH" for the purposes of deinking as being a pH of 10. (p. 357.) The reference goes on to discuss the removal of ink particles from the fiber surface by stating "[i]nk particles are removed from the surface of fibers by four actions: ... Swelling of fibers and opening of fibrils by alkali (caustic and silicate)" (p. 360.).

The following evidence provided to the Examiner demonstrates that Japan '299 patent must be interpreted to teach that deinking can only successfully be performed at pH 8.0 or higher. The language of the Japan '299 patent translation has been clarified by the support of: the Declarations of two individuals skilled in the art interpreting the Japan '299 patent; a translation of the Japanese Patent Office Decision of Opposition to the present sister Japanese patent application in view of the Japan '299 patent, granting the sister application in Japan as non-obviousness over the same reference; a publication issued approximately four years after the present priority date describing the novelty of non-alkaline de-inking and a Declaration of the manager of the plant described in the publication.

- III. The 2004 Declaration of Dr. Karl-Erik Eriksson provided for the Examiner's review. Dr. Eriksson specifically states that Japanese Patent 59-9299 ("the '299 patent") does not teach enzymatic deinking at a pH below 8. (§ 4.) Specifically, the only section of text which mentions the use of enzymes in a pH of less than 8 actually refers to the method of obtaining the specific enzyme and not deinking:

[a]ccordingly, this invention provides a de-inking agent for recycling old paper, containing cellulase. Cellulase commonly occurring in plants, animals, bacteria and fungi can be used in this invention without any special restriction, but alkaline cellulase is especially preferred. Alkaline cellulase is one having an optimum pH 8.0 – 11.5 (preferably 8.1 – 11.0). Such enzyme retains its activity in the alkaline range as well as the acid or neutral range, e.g. a product purified and fractionated from cellulase culture liquid of various origins by salting out, precipitation, dialysis and gel fractionation

It is the opinion of Dr. Eriksson that this statement regarding enzyme activity does not refer to de-inking activity, but specifically to the conditions under which the enzyme may be purified. It is the opinion of Dr. Eriksson that the Japan '299 reference does not suggest the use of the alkaline enzyme for de-inking under non-alkaline conditions.

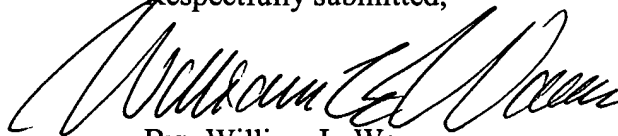
- IV. The 2004 Declaration of Dr. Douglas Eveleigh provided for the Examiner's review. Dr. Eveleigh expounds on the limited teachings contained in the Japan '299 reference. Specifically, Dr. Eveleigh states that the '299 reference merely "teaches one of ordinary skill in the art only the successful use of deinking enzymes with alkaline deinking chemicals." Dr. Eveleigh echoes the understanding reached by Dr. Eriksson that the discussion of enzymes outside of alkaline conditions refers specifically to methods and means of purification and not the use of those enzymes to de-ink in non-alkaline conditions.
- V. A translation of the Registered Copy of Decision of Opposition To Patent. In this Decision, the Applicant successfully defended the non-obviousness of the claims in its corresponding sister Japanese patent application (biological deinking with enzymes by controlling the pH in a range of 3 to 8) in an Opposition in the Japanese Patent Office on the basis of the Japan '299 reference, among others. The Japanese Decision concludes that "In the Publication of JP-A-59-9299, there is no description or suggestion of 'pulping after controlling the pH in the range of pH 3 to 8', a part of the construction of the present invention, Thus, the present invention cannot be construed to be easily inventable by a person having ordinary skill in the art from the description of JP-A-59-9299." Therefore, the Japanese Patent Office reviewing the Japan '299 in its original language did not find it to anticipate or render obvious the subject matter of the present claims.
- VI. A reference article entitled "Neutral Deinking Makes Its Debut" published in the October 1993 in Paper and Pulp International (PPI). The article explains how the first neutral deinking system began its operation in July of 1992, more than three years after the priority date of the present invention. The article further describes how the addition of alkalis such as sodium hydroxide to the pulp prior to or during deinking was standard and, at that time, thought to be required.

VII. The Declaration of Harold Schmid, provided for the Examiner's review, was the plant manager at the Zwingen Mill owned by Zwingen AG in 1992, which was the plant discussed in the above mentioned article "Neutral Deinking Makes Its Debut." During that time he was charged with the implementation of a deinking system which "was the first of its type in the world intended to be built and run on a neutral flotation deinking concept." Moreover, Mr. Schmid declares that "[t]here was no suggestion of non-alkali deinking at the Zwingen plant of which" he was aware prior to 1992. Therefore, the PPI article combined with the Declaration of Harold Schmid in response to the issue raised in the Final Office Action stands as objective evidence that neutral deinking was not obvious at the time to which the application claims priority (i.e., the Korean application filed in 1989).

Based upon the forgoing and the progress made during the interview of June 29, 2004, the Applicants believe that the claims are in a position for allowance and the Examiner should withdraw the pending rejections and allow the remaining claims to issue.

The Examiner is encouraged to call the undersigned attorney at 404-853-8081 if doing so will facilitate prosecution of the application. No additional fees are believed due, however, the Commissioner is hereby authorized to charge any fees due or credit any overpayment to Deposit Account 19-5029.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William L. Warren", is written over a horizontal line.

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